DIAGNOSTIC ALGORITHMS BASED ON THE INITIAL EVALUATION “semen anaysis”

1. Absent or Low-volume Ejaculate

- aspermia complete absence of seminal fluid

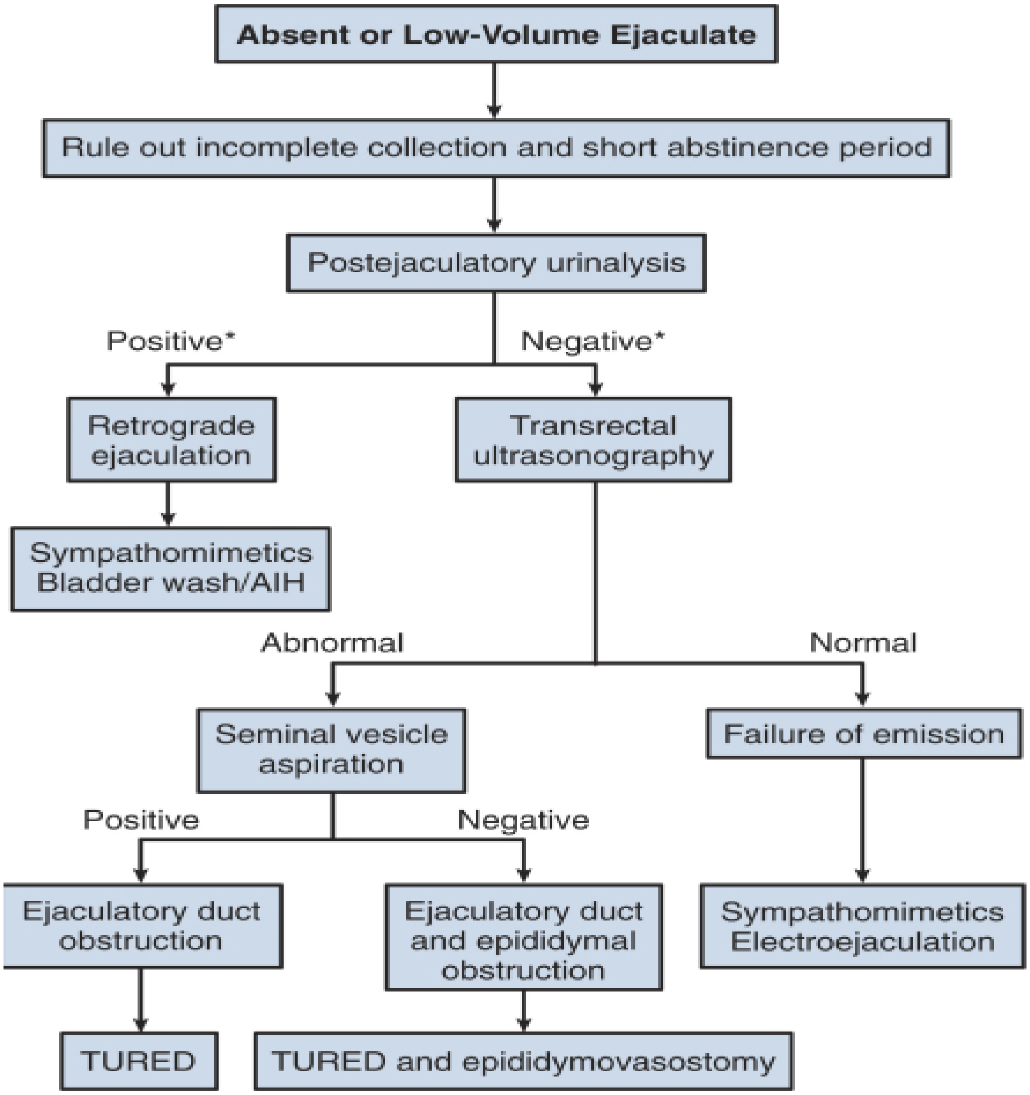
Causes of aspermia = causes of “failure of emission”

Causes of low volume S/A

- **I**nadequate collection (MOST COMMON)
- **Post trsticular cause of infertility**
  - **F**ailure of emission/ejaculation
  - **O**bstruction
  - **R**etrograde ejaculatio
- **L**ow production “ androgen deficiency/hypogonadism “

W/u for absent or low ejaculate volume

- 1) **repeat semen analysis** (minimum 2 days abstinence +/- Sudafed) to r/o incomplete collection


Absent or Low-Volume Ejaculate
Rule out incomplete collection and short abstinence period
Postejaculatory urinalysis
Positive*
Negative*
Retrograde ejaculation
Transrectal ultrasonography
Sympathomimetics Bladder wash/AIH
Abnormal
Normal
Seminal vesicle aspiration
Failure of emission
Positive
Negative
Ejaculatory duct obstruction
Ejaculatory duct and epididymal obstruction
Sympathomimetics Electroejaculation
TURED
TURED and epididymovasostomy

2. Azoospermia

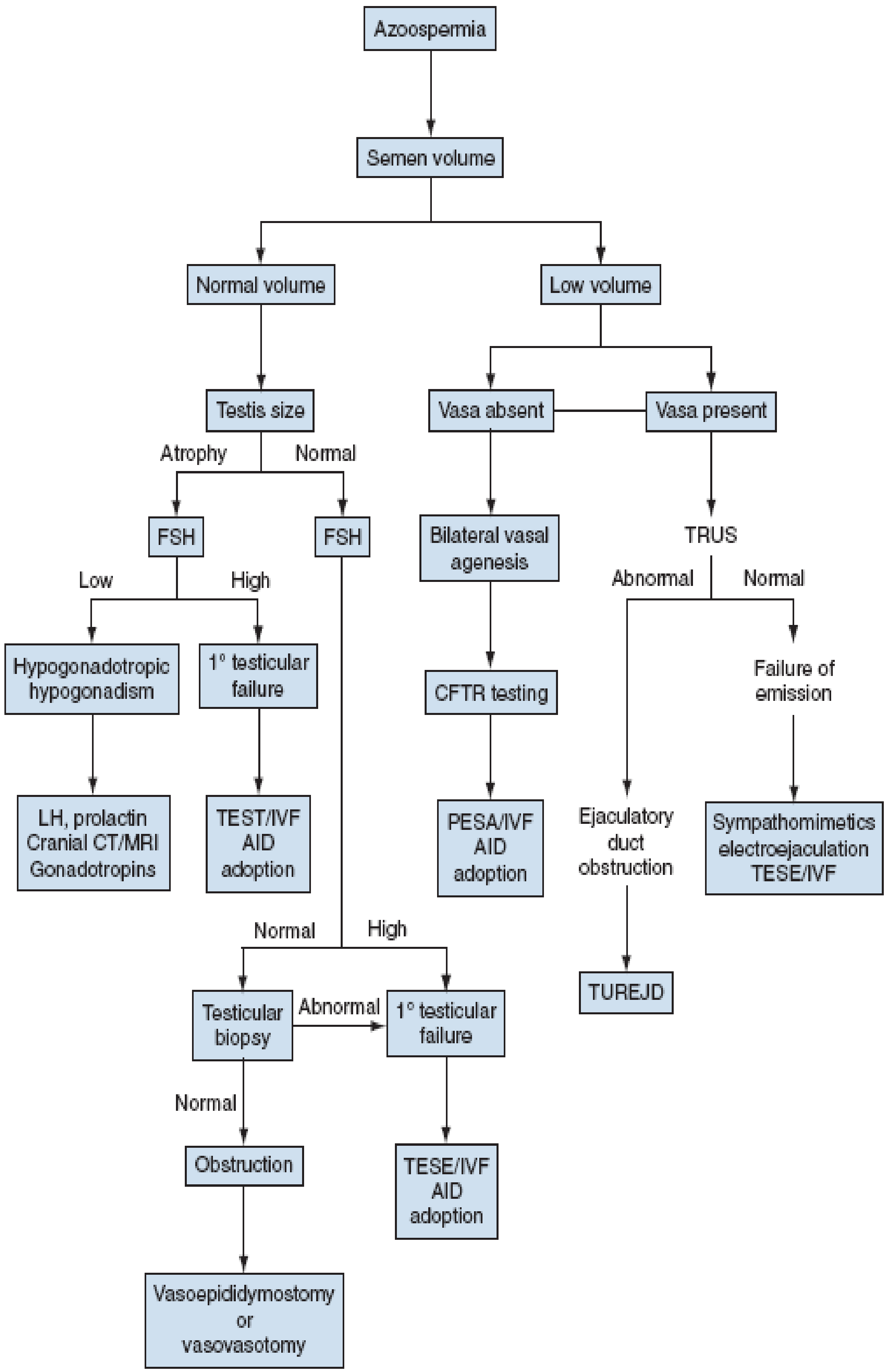
It is absence of sperm within the seminal fluid

Causes of azoospermia

1) NON-OBSTRUCTIVE
    a) pre-testicular (2%)
    b) testicular (50-90%)
    c) post-testicular (rare) }
2) OBSTRUCTIVE (10-50%) -

W/u

w/u for Azoospermia see figure


Azoospermia
Semen volume
Normal volume
Low volume
Testis size
Atrophy
Normal
FSH
FSH
Low
High
Hypogonadotropic hypogonadism
1° testicular failure
LH, prolactin
Cranial CT/MRI
Gonadotropins
TEST/IVF
AID
adoption
Normal
High
Testicular biopsy
Abnormal
1° testicular failure
Normal
Obstruction
Vasoepididymostomy
or
vasovasotomy
TESE/IVF
AID
adoption
Vasa absent
Vasa present
Bilateral vasal agenesis
CFTR testing
PESA/IVF
AID
adoption
TRUS
Abnormal
Normal
Failure of emission
Ejaculatory duct obstruction
TUREJD
Sympathomimetics
electroejaculation
TESE/IVF

3. Oligospermia

causes of oligospermia } **rarely found as an isolated abnormality**

1) **idiopathic (most common)**
2) **varicoceles (most common when oligo found w/ other abnormal semen parameters)**
3) partial obstruction
4) testis Ca
5) gonadotoxins
6) androgen deficiency

w/u of isolated oligospermia

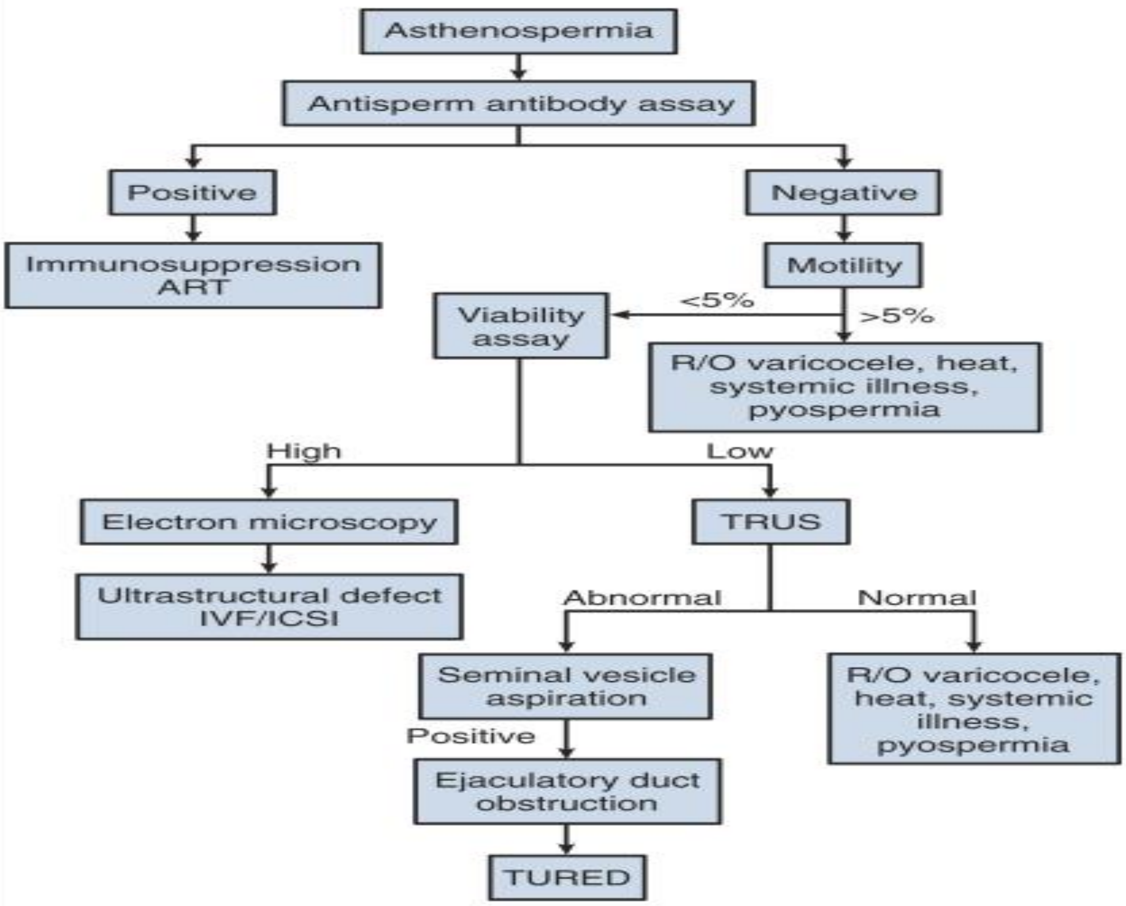
1) **repeat S/A**
2) **P/E to r/o varicocele**
    - varicocelectomy if present
3) **serum FSH, testosterone (if concentration is <10 million/mL)**
    a) both abnormal full hormonal evaluation
    b) only elevated FSH abnormal spermatogenesis (1° testicular failure)
         TESE/IVF, donor insemination, adoption

4. asthenospermia

Causes of asthenospermia (abN motility <50%)

1) Varicoceles (most common)
2) Anti-sperm Ab’s
3) GU infections
4) Prolonged abstinence
5) Partial ductal obstruction
6) Idiopathic
7) Spermatozoal ultrastructural defects (eg Kartagener’s)
8) Systemic illness
9) Spermicides } lubricants, toxic contaminants in container

w/u for isolated asthenospermia



5. Teratospermia

Causes of teratospermia

- **rarely found in isolation** } usually found with oligospermia & asthenospermia

1) drugs, heat, toxins (temporary insults to spermatogenesis)
2) varicoceles
3) absence of acrosome (rare)
4) partial obstruction
5) UDT

6. oligoasthenoteratospermia (OAT)

causes

- **most common S/A in infertile w/u**

1) **V**aricoceles (most common)
3) **I**diopathic
7) **P**artial ejaculatory duct obstruction (associated low semen volume)
2) **U**DT
5) **S**ystemic infection
6) **E**ndocrine abnormality
4) **D**rugs, heat, toxins

7. Normal Semen Parameters

Causes of infertility with normal semen parameters

1) female factors
2) immunologic infertility (anti-sperm Ab's)
3) incorrect coital habits
4) unknown

w/u of infertility with normal semen parameters

1) **repeat S/A**
2) **refer female to ob/gyne**
3) **post-coital test** (if female normal)